Section	Title	Revision Summary
Forward	Engineering Director's Viewpoint	• This section has been moved to the Forward of this publication from its previous placement in Appendix A in the 2014 publication.
Section I	Introduction	• A new Paragraph B has been inserted entitled "Expectations, Outcomes and Sustainability". • A new Paragraph C has been inserted entitled "Project Delivery Methods". • Previous paragraphs in this section have been renumbered accordingly. • *Renumbered Paragraph F has been modified as follows:* F. Common Historical Issues in the Design and Construction Phase - HRSD has routinely encountered a number of recurring issues in both the design and construction phases of projects. Some of these relate to HRSD preferences that may differ from the FIRM's or industry's normal practices. Also included in Appendix F is a listing of Expectations for Construction Administration and Construction Inspection that was developed to address many of these issues in construction.
Section V	Pipeline and Appurtenances	• The title of this section has been modified as "Pipeline and Appurtenances". • This section has been reorganized in addition to other edits which warrants a careful read. A few of the more significant edits are listed below. • *The following has been added to Paragraph A:* This section includes specifics for design and construction of force mains, line stops, sanitary sewer gravity mains and manholes, and valves. Designers for planned work on or near HRSD pipelines are to follow these requirements and use the appropriate details contained in Appendix D "Standard Details", appropriate technical specifications contained in Appendix E "Master Specifications Sections", and other referenced checklists or forms in Appendix B and Appendix F. • Line Stop information has been added under Paragraph D to this section that was formerly in the Standard Operating Procedures in the Appendix. • *The following has been added to the eccentric plug valve requirements under Paragraph E.1.e.4):* For exposed service applications plug valve shaft seals shall be externally adjustable and repackable without removing the actuator or bonnet from the valve under pressure. The actuator mounting bracket shall allow access to the packing gland and provide an air gap to visually inspect the packing.

Section	Title	Revision Summary
		For buried service applications shaft seals shall be fully enclosed and protected from the surrounding groundwater and soil via full circumferential metal to metal contact between the bonnet and the actuator body or by other means as approved by HRSD.
Section VI	Trenchless Installations and Rehabilitation	• The title of this section has been changed from "No Dig" to "Trenchless Installations and Rehabilitation". • This section has been reorganized in addition to other edits which warrants a careful read. A few of the more significant edits are listed below. • *Paragraph A has been modified as follows:* A. Introduction – In this section, information is presented on trenchless techniques and processes for both new and rehabilitation projects used to date on HRSD projects. Separate sections are also included on cleaning, closed-circuit television (CCTV), diversion pumping, and general items, which apply to most trenchless and rehabilitation projects. The designer should also be familiar with the HRPDC Regional Construction Standards latest edition for the sanitary sewer system rehabilitation means and methods. • *A new Paragraph C has been added as follows:* C. New Trenchless Pipe Installations - Professional Services firms, under the direction of HRSD's Engineering Department, Design & Construction Divisions, are required to work closely with contractors who are preparing to use approved trenchless crossing means and methods for installation of force mains or gravity sewer mains under roadways and waterways. HRSD developed a trenchless crossing checklist that has been based upon a number of "lessons learned" recently doing and preparing for these installations. This checklist is located in Appendix F of this manual and entitled "Checklist for Trenchless Crossing Operations" and is to be used, completed and submitted to HRSD jointly by the Inspector and Contractor. • *A new Paragraph C.2.a has been added as follows related to measurement and payment for trenchless crossings:* • Measurement and payment for Jack & Bore, Microtunneling, and similar trenchless methods for installation of casings and pipeline projects shall be on a lump sum basis paid to the Contractor upon a. successful completion (as defined in the Bid Documents) of each crossing.

Section	Title	Revision Summary
Section VII	Pump Stations	• This section has been reorganized in addition to other edits which warrants a careful read. A few of the more significant edits are listed below. • *The following language has been added to Paragraph I Introduction:* Wet well stations, force mains and pressure reducing stations are all sized and operated in accordance with HRSD's Hydraulic Grade Line (HGL) policy. • *New language has been inserted as Paragraph C.5 as follows:* 5. Pump stations shall be designed to comply with locality flood elevation freeboard requirements. The current locality requirements at the time of publication of this manual, that need to be verified for each project, are listed in Appendix F "Flood Elevation Freeboard Requirements". • *New language has been inserted as Paragraph D.1 as follows:* 1. Pumping stations building and site shall be designed and configured to be in harmony with the surrounding setting. Architectural and landscaping designs and renderings will be submitted to and approved by HRSD at the PER stage. • *New language has been inserted as Paragraph D.7 as follows:* 7. Set a new benchmark at each new pump station or PRS and provide a data sheet to include a site map, coordinates, elevations, descriptions at a minimum. Coordinate accuracy should be within 1/100 of a foot.
Section VIII	Treatment Plants	• This section has been reintroduced in this year's publication and includes reorganized categories in addition to other edits which warrants a careful read.
Section IX	Electrical and Instrumentation	• The formatting for this section has been changed from previous publications in addition to other edits which warrants a careful read.
Section X	Miscellaneous	• *New language has been inserted as Paragraph I.5 as follows:* 5. Pumping stations and other buildings and sites constructed in public areas shall be designed and configured to be in harmony with the surrounding setting. Architectural and landscaping designs and renderings will be submitted to and approved by HRSD at the PER stage.
Section XI	Drawings, Record Drawings and Valve Guides	• This section previously numbered Section XII has been renumbered as Section XI in this publication.

Section	Title	Revision Summary
Section XII	Public Participation Program	• This is a new section introduced into this publication.
Section XIII	Standard Details Overview	• This section previously numbered Section XI has been renumbered as Section XIII in this publication. • *The following new detail is introduced in this publication that resides in Appendix D:* 33. Load Test Hinged Bank Box
Section XIV	Master Specifications Sections Overview	• This section previously numbered Section XIII has been renumbered as Section XIV in this publication. • The listed specifications reside in Appendix E.
Section XV	Standard Operating Procedures Overview	• This section previously numbered Section XIV has been renumbered as Section XV in this publication. • The order of listing for included standard operating procedures has been modified in this publication. • The listed standard operating procedures reside in Appendix F. • *New standard operating procedures in this publication are as follows:* 2. HRSD Safety Programs 6. Flood Elevation Freeboard Requirements 13. Preconstruction Survey Requirements 14. Regulatory Reporting Requirements for Spills 16. Expectations for Construction Administration and Construction Inspection
Appendix A	Front End Documents	• This section previously numbered Appendix B has been renumbered as Appendix A in this publication.
Appendix B	Forms and Formats	• This section previously numbered Appendix C has been renumbered as Appendix B in this publication.
Appendix C	Public Participation Program Forms and Templates	• This is a new appendix for this publication and contains supporting material referenced in Section XII.
Appendix D	Standard Details	• This section previously numbered Appendix H has been renumbered as Appendix D in this publication. • Detail #6 – Air Vent – was modified by adding the following note 5. 5. Parge brick work or concrete elevation rings with grout inside and out, continue into casting. • A new detail #33 - Load Test Hinged Bank Box - has been added.

Section	Title	Revision Summary
Appendix E	Master Specifications Sections	• This section previously numbered Appendix I has been renumbered as Appendix E in this publication.
	01040 – Coordination	• *The following new paragraphs were added to this section:* 1.5 HRSD UNIFIER ENTERPRISE PROJECT MANAGEMENT SYSTEM A. The Contractor will be required to utilize HRSD's Unifier Enterprise Project Management System for the life of this project unless otherwise approved in writing by HRSD. This includes but is not limited to taking part in the required software training (generally a half day course at HRSD) and using the web based software as intended to facilitate the management of the project. The project management software will be used to track and manage information such as meeting action items, shop drawing submittals, RFI's, Change Orders and Work Change Directives. Contractor will be obligated to take required work flow actions in a timely manner such that workflow and schedule are not adversely impacted. 1.6 ENTERPRISE RESOURCE PLANNING SYSTEM (ERP) A. The Contractor will be required to utilize HRSD's Enterprise Resource Planning (ERP) System for the life of this project unless otherwise approved in writing by HRSD. This includes but is not limited to taking part in the required software training (generally a half day course at HRSD) and using the web based software as intended for Applications for Payment. Contractor will be obligated to take required work flow actions in a timely manner such that workflow and schedule are not adversely impacted.
	01060 – Special Conditions	• *The following modification was made to Paragraph 1.2.E.1.e:* e. Use of Oracle Unifier Management System and Enterprise Resource Planning (ERP/EBS). • *The following paragraph has been added as 1.3.E:* E. Power: 1. The Contractor is responsible for obtaining at his own expense all temporary power necessary for completion of the work. 3. The Contractor shall coordinate with {insert utility owner and/or other applicable source} for obtaining temporary power. • *The following paragraph has been added as 1.4.B:* B. Contractor shall coordinate preconstruction photographing and video recording with Owner, Engineer and {insert jurisdictional owner} in order to attend the documentation process.

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		• *The following paragraph has been added as 1.4.C.2:* 2. Preconstruction photographs shall be taken during dry weather and immediately following a rain event.
	01270 – Measurement and Payment	• *Paragraph 1.3.B has been modified as follows:* B. Item 2 – Horizontal Directional Drill (HDD), Bore & Jacked Casing, or Microtunneling {insert description}. 1. Measurement: Item will not be measured separately but paid for on a lump sum basis.{insert description}. 2. Incidental Items: {insert description}. a. {List any unique work items}. b. {List any unique work items}. 3. Basis of Payment: Payment shall be made at the Contract Lump Sum Price for each successfully completed crossing. {insert description}.
	01323 – Record Drawings	• *The following language has been appended to Paragraph 1.1.D.4.b:* The Digital spreadsheet shall be directly compatible with ArcGIS software without requiring any additional re-formatting, such as a Shapefile, Personal Geodatabase, File Geodatabase, or properly formatted Excel or CSV files.
	01340 – Submittals	• *The following paragraph has been added as 1.2.C:* C. Oracle Unifier Management System 1. See Unifier Management System User Manual • *The following paragraph has been added as 1.4.B.6:* 6. All submittals shall be submitted through the Unifier Management System. Please refer to the Unifier Management System User Guide to see the Business Process from start to finish. • *The following modification was made to Paragraph 1.4.C.3.a as follows*: a. Interim submittals: Submit PDF format through the Unifier Management system until manual is approved. • *The following modification was made to Paragraph 1.5.A.1 as follows*: 1. Transmit all submittals through the Unifier Management System:
	01520 – Maintenance of Pipeline Operations	• *The following paragraph has been added as 1.2.B.4*: 4. Contractor responsible for fuel and required maintenance and documentation.

Section	Title	Revision Summary
		• *The following paragraph has been added as 1.2.E.3*: 4. Consideration shall be given to extreme weather conditions as to whether or not reductions in crew shift time periods will be required at Owner's discretion. • *The following language has been appended to paragraph 1.3.A.4:* The following will be discussed at this meeting: a. Review of tie-in checklist b. Review of site conditions to include rodding of air vents, operation of valves, access to all appurtenances, etc. c. Review of weather forecast/weather impacts to include freezing temperatures for pump & haul operations. d. Review contact information • *The following paragraph has been added as 1.3.B.1.c*: c. Text messaging shall not be an acceptable form of communication for coordination or any other purposes related to the project. • T*he following paragraph has been added as 1.3.D.11*: 11. The Contractor is responsible for providing adequate screening during any bypass pumping or pump & haul operations in order to minimize debris.
	01650 – Facility and System Start-up	• This is new Master Specification for this publication.
	02510 – Ductile Iron Pipe	• *Paragraph 2.1.A.4. has been modified as follows:* 4. Ceramic Novolac Epoxy Lining: a. Induron Coatings, Inc., Protecto 401. b. Ergon Novocoat SP 2000W c. Permox CTF • *Paragraph 2.2.D. has been appended as follows:* 5. At no time shall gaskets be cut that will be used in the installation of pipeline. • *Paragraph 2.2.E.1.a. has been appended as follows:* • 11) Field cutting and tapping of lined pipe and fittings is not permitted without written approval from HRSD on a case by case basis. If field cuts are allowed, Contractor shall repair cut with liner repair kit in accordance with manufacturer's recommendations.

Section	Title	Revision Summary
		a) All air release valve installations shall be field tapped at the true, as-constructed high point. All taps shall be verified from the inside of the pipe and the liner shall be repaired as necessary. b) Short lengths of pipe required to accommodate pipe and fitting geometry shall be furnished factory lined. • *Paragraph 2.2.E.1.b.7.a. has been modified as follows:* a) These areas shall be coated with the approved manufacturer's joint compound applied by brush to ensure proper coverage. Care must be taken so that the joint compound is smooth without excessive build-up in the gasket seat or on the spigot ends. • *The following language has been inserted into Paragraph 2.2.E.1.b.11:* a) All air release valve installations shall be field tapped at the true, as-constructed high point. All taps shall be verified from the inside of the pipe and the liner shall be repaired as necessary. • *The following language has been inserted into Paragraph 3.2.G.1:* b. Where tapping polyethylene encased pipe, first wrap location of tap with three (3) layers of polyethylene adhesive tape and make tap through tape. • *The following language has been inserted into Paragraph 3.4.B.1:* c. All piping and appurtenances (including air vents) shall be fully installed to the extent possible prior to performing testing. • *Paragraph 3.4.B.1.g.1. has been modified as follows:* 1) Contractor shall use Owner supplied gage.
	02520 – Polyvinyl Chloride Pipe	• *Paragraph 2.2.A.1.b.2. has been appended as follows:* b) At no time shall gaskets be cut that will be used in the installation of pipeline. • *The following language has been appended to Paragraph 2.2.B.1:* 8) At no time shall gaskets be cut that will be used in the installation of pipeline.
	02531 – Line Stops / Bypass on Sanitary Sewer Force Main Systems	• *The following language has been appended to Paragraph 2.2.B:* Set screw style locking mechanisms that tighten against wedges set against the completion plug and have removable thread inserts within the tapping fitting flange are also acceptable. Set screws set directly against completion plugs and/or without removable thread inserts within the tapping fitting flange will NOT be acceptable.

Section	Title	Revision Summary
	02610 – Valves	• *The following language has been appended to Paragraph 2.3.C:* 4. For exposed service applications, plug valve shaft seals shall be externally adjustable and repackable without removing the actuator or bonnet from the valve under pressure. The actuator mounting bracket shall allow access to the packing gland and provide an air gap to visually inspect the packing. 5. For buried service applications, plug valve shaft seals shall be fully enclosed and protected from the surrounding groundwater and soil via full circumferential metal to metal contact between the bonnet and the actuator body or by other means as approved by the OWNER. • *Paragraph 2.3.D.3. has been modified as follows:* 3. Plugs shall be solid one piece with a cylindrical seating surface eccentrically offset from the center of the shaft. Plug facing shall be Buna-N with a minimum hardness (Shore A) of 70 durometer.
	02774 – Condition Assessment Data Collection for Pipelines being Repaired or to be Taken Out of Service	• *The following language has been appended to Paragraph 3.02 Asbestos Cement Pipelines:* 22. The coupon/sample shall be contained in accordance with appropriate asbestos handling procedures and delivered as requested by OWNER for further testing.
Appendix F	Standard Operating Procedures for Engineered Projects	• This section previously numbered Appendix K has been renumbered as Appendix F in this publication.
	HRSD Safety Programs	• This information that previously existed in a separate appendix has been reformatted as a SOP and included in Appendix F.
	Flood Elevation Freeboard Requirements	• This is a new SOP for this publication.
	Regulatory Reporting Requirements for Spills	• This information that previously existed in a separate appendix has been reformatted as a SOP and included in Appendix F.

Section	Title	Revision Summary
	Coordination of Preconstruction Phase Items	• This SOP was formerly named "Coordination with the Contract Specialist" • This SOP has been modified extensively and warrants a careful read.
	PER, Design, and Construction Submittal Requirements	• References to Oracle Unifier Project Management System has been incorporated into this SOP.
	Check List for Line Stop Installations	• This SOP has been renamed from the former "Guidelines for Line Stops". • The Qualifications requirements language from the previous version SOP has been relocated into Section V Pipeline and Appurtenances.
	Preconstruction Survey Requirements	• This is a new SOP for this publication.
	Expectations for Construction Administration and Construction Inspection	• This SOP replaces the former "General Duties & Expectation of Construction Inspectors".